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AUTHOR Barresi, Charles M.; McConnell, Donna J.
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ABSTRACT

Adult day care is increasingly being offered as an alternative to institutionalization. However, this alternative is not suitable for nor is it available to all elderly. There is need to determine if elderly users of these services have distinguishable characteristics from those who do not. This study evaluates 35 impaired elderly day care clients using an enlarged version of the Duke Older American's Resources and Services (OARS) Functional Assessment instrument and compares them with 93 impaired persons taken from a random sample of community elderly measured with the same instrument. Multiple discriminant analysis is used to determine if factors exist which predict use of adult day care facilities. Results show three main domains distinguish day care participation, social resources, economic resources, and mental health. Persons participating in day care are more likely to be younger, to live with other people, to have more income, and to have fewer emotional disturbances. They are also more likely to be disoriented, but to be in better overall physical health than elderly persons who don't use day care. The findings suggest that day care clients are more often labeled as dependent by their families than are community elderly. (Author/BH)

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DISCRIMINATORS OF ADULT DAY CARE PARTICIPATION AMONG IMPAIRED ELDERLY[1]

Charles M. Barresi, PhD[2]

and

Donna J. McConnell, BA[2]

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DISCRIMINATORS OF ADULT DAY CARE

PARTICIPATION AMONG IMPAIRED ELDERLY

ABSTRACT

Adult day care is increasingly being offered as an alternative to institutionalization. However, this alternative is not suitable nor is it available to all elderly. There is need to determine if elderly using these services have distinguishable characteristics from those who do not. This study evaluates 35 elderly day care clients using an enlarged version of the Duke OARS Functional Assessment instrument and compares them with 93 impaired persons taken from a random sample of community elderly measured with the same instrument. Multiple discriminant analysis is used to determine if factors exist which predict use of adult day care facilities. Results indicate that three domains distinguish day care participation; social resources, economic and mental health. Discussion and implications center on the conclusion that day care clients are more often labeled as dependent by their families than are community elderly.

Key Words: OARS Functional assessment, Multiple discriminant analysis, Community elderly, Alternative to institutionalization, Dependent label

Discriminators of Adult Day Care Participation Among Impaired Elderly

According to the gerontological literature, there is a movement away from institutional care to community based services. Some residents in nursing homes do not need 24-hour skilled nursing care and if given a choice many prefer not to be institutionalized (Noelker and Harel, 1978). In addition, families reluctantly place their elderly relatives in nursing homes and do so only after various solutions have been attempted (Dunlop, 1980; Shanas, 1979; Treas, 1977). In response to these concerns adult day care has been given growing attention as an alternative to nursing home care. However, before this alternative is chosen service providers, family members, and the elderly adult must decide if this is the best level of care for the particular individual. Brahna Trager emphasizes that in selecting any alternative to institutional care appropriateness should be the decisive factor (Lavor, 1979:36).

The development of an adequate information base is necessary if alternatives to nursing home care are to be provided in a comprehensive and efficient manner. Researchers (German, 1981; Kane and Kane, 1980; Lavor, 1979) indicate that additional research is needed to define that subgroup of elderly who are most in need of assistance. By defining the characteristics (i.e.: sociodemographics, physical and mental statuses) of the elderly in need of help and specific needs, the appropriate level of care can be provided.

Previous research (Brody et al., 1978; Palmore, 1976; Vicente et al., 1979) have examined factors related to institutionalization. These studies permit identification of certain demographic characteristics, socioeconomic factors, and physical health conditions to be associated with institutionalization.

It has been found that the majority of the elderly population are able to live independently without help, although, a small percentage have severe limitations which places them at risk of being placed in a nursing home. Jette and Branch (1981) investigated the non-institutional elderly of Framingham, Massachusetts and found that the vast majority were self-sufficient. However, 7% of the respondents reported needing assistance to perform one or more of the basic activities of daily living. In another investigation (Branch and Jette, 1981), 6% of the respondents had unmet social needs. Clearly, these studies indicate that within this population there are people who urgently need assistance in order to live independently within the community.

In recent years, adult day care is growing in attention as a long-term care alternative to institutionalization. Weissert (1976, 1977) has defined two discrete models of adult day care. Model I, a medical model, provides skilled care for clients who are frequently discharged hospital patients. According to Model II, less skilled care is available with more emphasis on social orientation. In this study, adult day care is viewed as Model II, in which the older adult is provided with social activities, nutritional, and health care services under a protective environment during the day. Although the types of services has been defined and several studies (Wan et al., 1980; Weissert et al., 1980; Wan and Weissert, 1981) have done a comparative analysis of day care with homemaker services or nursing home admissions

(Arling et al., 1984; Weissert, 1978), individual characteristics of adult day care clients in comparison with community impaired elderly remains untapped. Ullmer et al., (1982) have provided additional information in defining the target group of elderly who are in need of adult day care services. However, their study is limited to various activities of daily living. The present study includes a broader range of variables, thus provides a more practical definition of this group of elderly

Some elderly are placed in day care facilities because of need resulting from social isolation and functional limitation. However, it may be that many elderly living in the community with similar limitations are not using day care services. These individuals may not need 24-hour skilled nursing care, but would benefit from an adult day care program.

In order that day care may be selected as an appropriate alternative to institutional care, it is imperative that predictors of this group be identified. The purpose of this study is to provide a more comprehensive analysis of characteristics which distinguish adult day care participants and to determine if they are a distinguishable group of people from other impaired elderly adults residing in the community. Figure I illustrates a model of those variables which are identified in the literature as predictors of day care participation among impaired elderly.

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Figure 1 about here

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METHODS

Sample. The data for the adult day care were collected by face-to-face interviews of 50 elderly adults, 60 years of age and older, who attended a day care center in Summit County, Ohio.

The data for the community elderly were obtained from the survey of Summit County's older adult, which was conducted by the PISCES Project in 1981. This sample includes 1139 non-institutionalized elderly, who live in Summit County but did not participate in a day care program.

From each of the samples, those individuals who are classified either as generally impaired, greatly impaired, very greatly impaired, or extremely impaired were selected for analysis. A total of 35 impaired day care clients and 93 impaired community elderly are used in this study.

Measurement Instrument.--The SCOARS, Summit County's Older Americans Resources and Services, assessment questionnaire was used to measure various dimensions of the older adult (Barresi and McConnell, 1984). This instrument is a modified version of the Duke University's Older Americans Resources and Services multidimensional functional assessment questionnaire, called OARS (Duke University, 1978). The OARS instrument has been found to be a valid and reliable measure of the needs of the elderly (Fillenbaum & Smyer, 1981). It assesses the functioning level of the older adult on each of the five following domains:

1. Social Resources
2. Economic Resources
3. Mental Health
4. Physical Health
5. Performance of Daily Living

Measures.--The two dependent variables consist of those impaired respondents who receive adult day care services and those who do not. Discriminating variables were grouped into the five domains of the measuring instrument.

The various independent variables include the following: social resources, economic resources, mental health, physical health, activities of daily living, and demographic characteristics. Based on previous studies (Wan and Weissert, 1981; Kohen, 1983) social resources are measured by the following four indicators which address the availability of social networks: marital status, measured as (1) married or (0) widowed, divorced, separated or never married; living arrangement is measured as (1) for those living with others and (0) for those who live alone; presence of a confidant as measured by having someone outside of the home to trust and confide in, (1) yes and (0) no; and finally the availability of someone who can provide emergency help (1) yes and (0) no.

Economic resources are measured by an income ladder ranging from (1) 0-$499 up to (13) $40,000 or more. Respondents were also asked their perception of the adequacy of their income with responses scored as (1) poorly, (2) fairly well, (3) very well.

Mental health is measured by two indicators of mental status. Reality awareness is determined by a series of preliminary questions with the number of errors coded from 0 to 10. A brief MMPI Test indicates the degree of emotional impairment in each respondent with scores ranging from 0 to 15.

The physical health of respondents is measured by three items. The first two identify the number of times a medical doctor was seen and/or the number of hospital stays experienced in the last 12 months. The last question in this domain asked for the respondent's perception regarding the need for more medical treatment. A yes is coded as (1) and no (0).

An index of activities of daily living (ADL) was constructed for both instrumental and basic ADL. This follows suggestions from previous studies (Branch and Jette, 1982; Stoller and Earl, 1983) to differentiate between the

two types for more accurate measure of functional abilities. Instrumental ADL include functionary levels in grocery shopping, meal preparation, and housework. Basic ADL consist of dressing, bathing, and toileting. A score of (1) is housework, whereas BADL consists of dressing, bathing, and toileting. A score of (1) is assigned for those who can function without assistance in each of the functioning levels, otherwise a score of (0) is assigned. The IADL and BADL indexes are computed from the sum of the total scores in each type of daily activity.

The final set of independent variables selected for this analysis consists of four demographic characteristics, age, race, sex, and education. Those who reported their age as between 60 through 74 are scored (0) and those indicating their age as 75 and over are scored (1). These two age groups distinguish between the "Young-Old" and the "Old-Old" (Neugarten, 1974). Sex is measured as (1) male and (0) female. Race is measured as (1) white and (0) non-white, while education is measured in intervals of completed education ranging from (1) indicating 0 to 4 years of schooling up to (8) designating post graduate college.

RESULTS

The data were analyzed using a multiple stepwise discriminant analysis (MDA). Discriminate analysis is a technique which weights and linearly combines the discriminating variables into two or more groups which are as statistically distinct as possible. This method determines the optimum coefficient for each predictor variable so that it will produce the maximum separation between the discriminate scores for the groups. These variables are seen as comprising a discriminant function which distinguishes between the

groups. Discriminant analysis can also be used to classify persons, on the basis of these variables, into one of several mutually exclusive and exhaustive groups. MDA can thus serve both the purpose of analysis and classification of data, and is particularly useful in determining the multivariate effects on predicting group membership (Klecka, 1980, Legge et al., 1979).

The seventeen discriminating variables which are identified in Figure 1 were entered into the MDA to determine their relative power in distinguishing between those elderly persons who are more likely to use day care facilities and those who are not. The Rao method of MDA was selected because it identifies those variables which produce the largest increase in Rao's V. Rao's V is a generalized measure of the overall separation between the groups.

Discrimination of Day Care Participation--Table 1 shows that 10 of the 17 variables contribute enough discriminating power to be included in the analysis. In order of the changes in Rao's V marital status, mental health, reality orientation, income, living arrangement, age, perceived adequacy of income, physical health, and sex are the most important variables. The presence of a confidant contributes to the separation of the elderly into the two groups, but is less important.

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Table 1 about here

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Variables which did not contribute to the separation, when all the other variables are taken into account are; race, education, availability of emergency aid, number of times in the hospital in the past year, perceived adequacy of medical care, and both instrumental and basic activities of daily living.

The analysis created one discriminant function as shown in Table 2. The linear combination of variables produce the ability to separate the elderly in the sample into two groups according to the likelihood of using or participating in a day care setting. The amount of variance in the discriminant function explained by the classifying variables is 42.5%.

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Table 2 about here

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The analysis identified the group centroids, or means of the discriminant function, as positive for the community group and negative for the day care group (Table 3). A positive coefficient indicates a high score on the variable is associated with being in the community and a negative indicates a high score on the variable is associated with being a day care participant.

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Table 3 about here

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The profile which emerges is that those persons in the sample who are more likely to use day care are younger, are more often widowed, divorced, or never married, they more often live with others than alone, are less likely to have a confidant, have more income and perceive that income as adequate, have less emotional disturbances, are more likely to be disoriented, but are in overall better physical health. The larger the magnitude of the coefficient the greater the contribution of that variable as a discriminator between the two groups.

Classification of Cases--The last part of the analysis is the evaluation of the degree to which the discriminant function allows for the correct classification of cases into groups using the discriminating variable. As shown in Table 4, the percent of "grouped" cases correctly classified is 82.8%. This is a 32.8% increase over chance assignment. This is also a 66% improvement over the assignment of cases on the basis of prior probabilities.

Table 4 about here

The variables in this analysis are somewhat better at identifying community individuals since only 12.9% are incorrectly identified as compared with 28.6% of day care participants who are identified as community persons.

Interpretation and Discussion

The results of this study, similar to those of Ullmer, et al. (1982), indicate that those persons who participate in adult day care make up a distinct group. The profile of characteristics provided by the function gives us an overall description of typical day care participants.

When the standardized function coefficients are ranked in order of magnitude a pattern begins to emerge by which the discriminant function can be identified (Table 5). The variables with the three largest coefficients are all in the social resources domain. More importantly when these coefficients are more closely examined we see an underlying dimension of dependence--independence emerging.

Table 5 about here

Those persons who are not married and are living with others, are more usually in a dependent condition than those elderly who are married and living with spouse. Another facet of this dependence is also indicated by the lack of a confidant as reported by the typical day care participant.

The second domain which the function highlights is the economic. Day care users report higher income and perceive their income as adequate for their needs. This domain clearly illustrates that despite Title XX assistance, day care participants are economically better off than their

community counterparts. While the absolute measure of income would seem to place them in a higher category than community elderly, the relative judgment of adequacy of income might be a further indicator of the dependent condition of the day care population. Because of this dependent condition, they may perceive their income as adequate in relative terms.

Mental health is the third domain which is seen in the discriminant function. The day care elderly display better mental health by virtue of the assessment of less emotional disturbances. They are also more disoriented when given a series of questions to determine their acuity regarding everyday matters. Apparently the condition of dependency can contribute to an overall better outlook on life and reduce worries while at the same time creating a condition in which the elderly person is so sheltered as to be "out of touch" with day to day events.

The remaining coefficients which make up the discriminant function indicate that day care participants are younger and in better health. Ordinarily, it would seem that these characteristics would indicate an ability to remain in the community group, but given the dependent condition as indicated by the social resources indicators, it is apparent that they do not prevent the elderly person from being placed in the day care setting. Indeed, if these persons, given their dependent condition were older and in poorer health, they would no doubt be placed in a permanent long term care setting.

In summary, it appears, at least with the sample used in this study, that there is a distinct group which day care facilities serve. Given the underlying dimension of dependence it appears that those unmarried elderly living with family members are more often labeled as dependent. It may be that those elderly who are in the community are in many ways dependent also, but because there is no one there to observe their failings they do not become

labeled as dependent and are thus allowed to continue in a community setting until they are absolutely incapable of managing for themselves. The situation might be likened to the adolescent who is capable of more mature behavior than his/her doting parents will allow. The relationship between social labeling and decreasing competence among the elderly has been clearly stated by Kuypers and Bengtson (1973). The argument which they make regarding increasing dependence and the lack of self-confidence which comes about through social labeling following role loss, role changes, and lack of supportive reference groups seems to apply to day care participants.

This should not be interpreted as meaning that day care centers create or contribute to dependence among elderly clients. This analysis does, however, call into question the role of social supports of the elderly and day care participation.

FOOTNOTES

[1] Revision of a paper presented at the 37th Annual Scientific Meeting of the Gerontological Society of America, San Antonio, Texas, November 16-20, 1984. The authors would like to thank John Allen, Ronald Huiatt, and the Summit Senior's Team Corporation, for making the PISCES Project data available. Dennis Byrne and Geoffery Greer provided helpful suggestions with the analysis.

[2] The University of Akron, Department of Sociology, Akron OH 44325

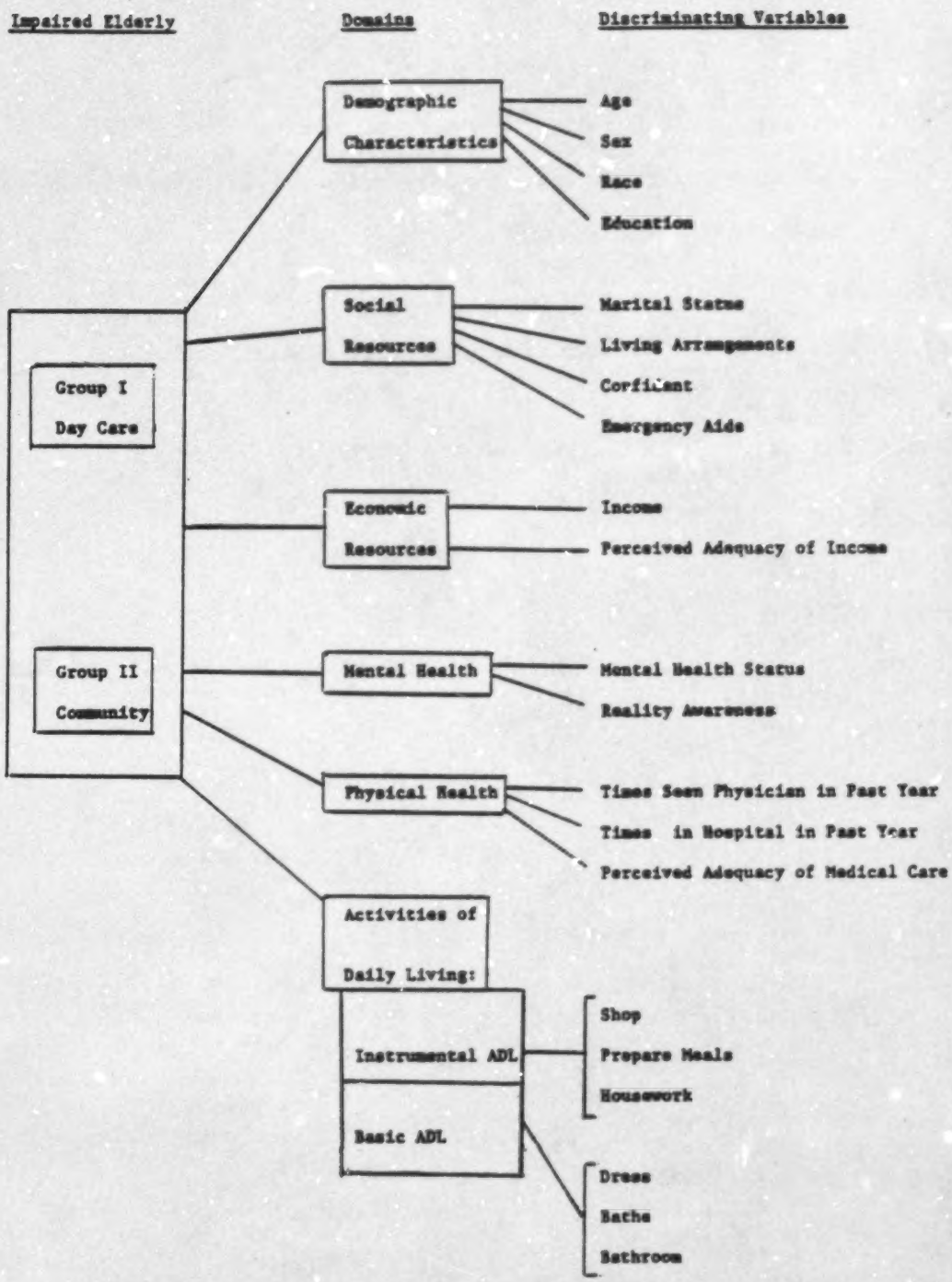

Figure 1. Relationship Between Impaired Elderly Adults and Discriminating Variables.

Table 1. Summary Table for Discriminators of Day Care Participation According to Step Entered, Multivariate F Ratio, and Change in Rao's V.

Step	Variable	F Ratio (Multivariate)	Rao's V	Change in Rao's V	Significance of Change
1	Mental Health	5.84*	14.83	14.83	.000
2	Reality Orientation	6.72*	25.61	10.77	.001
3	Living Arrangement	14.96*	33.25	7.65	.006
4	Marital Status	22.16*	50.31	17.06	.000
5	Income	5.36*	60.62	10.31	.001
6	Age	5.25*	67.12	6.50	.011
7	Physical Health	3.57*	71.65	4.54	.033
8	Sex	1.57	75.45	3.80	.051
9	Confidant	4.35*	78.03	2.58	.108
10	Adequacy of Income	2.95*	83.44	5.41	.020
	F Insufficient to Enter Analysis Beyond This Step (F<1.0)				
11	Race				
12	Education				
13	Emergency Aid Available				
14	Times in Hospital in Past Year				
15	Perceived Adequacy of Medical Care				
16	Instrumental Activities of Daily Living				
17	Basic Activities of Daily Living				

OVERALL F = 7.68* (10,104)

* P < .01

Table 2. Standardized Discriminant Function Coefficients.

Variable	Coefficients
Age (60-74=0, 75+=1)	.36*
Sex (Female=0, Male=1)	-.22
Marital Status (Non-Married=0, Married=1)	.91
Living Arrangement (Live Alone=0, Live With Others=1)	-.68*
Confidant (No=0, Yes=1)	.66*
Income (Low=0, High=13)	-.37*
Adequacy of Income (Poor=1, Fair=2, Very Well=3)	-.56*
Mental Health (Excellent=0, Very Poor=15)	.51*
Reality Orientation (Excellent=0, Very Poor=10)	-.41*
Physical Health (Excellent=0, Very Poor=10)	.29*
Canonical Correlation	Rc = .65**
Variance Explained by Classifying Variables	Rc^2 = .423

*P < .01
**P < .001

Table 3. Canonical Discriminant Functions Evaluated at Group Means (Group Centroids).

Group	Mean
Day Care	-1.43
Community	0.50

Table 4. Classification Results--Percent of Cases Correctly Classified According to Group Membership.[a]

Actual Group	N	Predicted Group Membership Group 1	Group 2	
1 Day Care	35	71.4	28.6	100
2 Community	93	12.9	87.1	100
	128			

[a] Percent of "grouped" cases correctly classified: 82.8%

Percent correctly classified are shown on the diagonal.

Table 5. Discriminators of Adult Day Care Participation by Rank Order of Standardized Function Coefficient and Variable Domain.[a]

Variable	Coefficients	Domain
Marital Status	.91	
Living Arrangement	-.68	Social Resources
Confidant	.66	
Adequacy of Income	-.56	Economic
Mental Health	.51	Mental Health
Reality Orientation	-.41	
Income	-.37	Economic
Age	.36	Demographic
Physical Health	.29	Physical Health

[a] A Positive coefficient means a high score on the variable is associated with being in the community. A negative coefficient means a high score on the variable is associated with day care participation.

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